Date: Sun, 12 Jun 94 04:30:14 PDT
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>
Errors-To: Ham-Ant-Errors@UCSD.Edu
Reply-To: Ham-Ant@UCSD.Edu
Precedence: Bulk
Subject: Ham-Ant Digest V94 #181
To: Ham-Ant

Ham-Ant Digest Sun, 12 Jun 94 Volume 94 : Issue 181

Today's Topics:

Send Replies or notes for publication to: <Ham-Ant@UCSD.Edu>
Send subscription requests to: <Ham-Ant-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Ant Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

Date: 11 Jun 1994 12:54:01 -0400
From: news1.digex.net!access.digex.net!not-for-mail@uunet.uu.net
Subject: 2 antennas into receiver?
To: ham-ant@ucsd.edu

In article <2ta412$nn6@cville-srv.wam.umd.edu>, Scott Richard Rosen wrote:
> In article <brett_miller.290.0008C5D5@ccm.hf.intel.com>,
> Brett Miller - N7OLQ <brett_miller@ccm.hf.intel.com> wrote:
> >I have an AOR AR3000A that has coverage from about 100KHz to 2 GHz. It only
> >has one BNC connector on the back so I am wondering if there are any
> >disadvantages to hooking a BNC T connector to it with one end going to a
> >discone, while the other end goes to a random wire antenna (w/tuner). I can't
> >think of any reason why this wouldn't work, but not being a true wizard of
> >antenna black magic, I thought I'd check to see if anyone had thoughts on this.
>
> OK, so what's wrong with this picture?

>
>   ================ 50 ohm coax
> 50 ohm impedance =====|
>   ================ 50 ohm coax

You're going to have phase cancellation problems. You may want to try attaching the discone and the longwire feed point together. You'll get more of a 'continuous coverage' antenna that way. Not perfect but more effective than what you propose. Either way no harm done since you're not transmitting.

Andy N3LCW

Date: 11 Jun 1994 18:38:59 -0400
From: ihnp4.ucsd.edu!swrinde!gatech!udel!news.udel.edu!brahms.udel.edu!not-for-mail@network.ucsd.edu
Subject: <<Best dual band verticals?>>
To: ham-ant@ucsd.edu

We are having some debate in the club about the best base station verticals for 2m/440.

If you have a vote to cast one way or the other in the following categories:

$50-100   100-150   150-200   200-250 250 and up

we would love to hear it.

Tnx Bob

--
Bob Penneys, WN3K   Frankford Radio Club Internet: penneys@pecan.cns.udel.edu
Work: Ham Radio Outlet (Delaware) (800) 644-4476; fax (302) 322-8808
Mail at home: 12 East Mill Station Drive   Newark, DE 19711 USA

Date: 11 Jun 1994 13:15:49 -0700
From: btree.brooktree.com!usenet@network.ucsd.edu
Subject: Balloon
To: ham-ant@ucsd.edu

In article <Cr1wys.EC1@ncifcrf.gov>, Joe Mack <mack@ncifcrf.gov> wrote:

[about balloon-supported antennas]

>   I've done this a few times and the operative word is "light". Even
>if the load is zero the angle of the line is determined by tan-1 (lift/drag)
>or something like that. Once you have a breeze not much is going to save you.

An excellent compromise is the kite-balloon. Attach both a kite and a
balloon to the end of the antenna and let the combination rise. The
balloon provides lift at all times, and drag that depends on the wind
speed. The kite provides additional lift when the wind blows and nicely
balances the drag from the balloon. The result is an antenna which has
an essentially constant angle from the anchor point.

Bob Hale   hale@brooktree.com

Date: 11 Jun 1994 19:09:09 GMT
From: ihnp4.ucsd.edu!swrinde!howland.reston.ans.net!sol.ctr.columbia.edu!
hamblin.math.byu.edu!news.byu.edu!news@network.ucsd.edu
Subject: Curing RF Voltage on Rig case in Mobi
To: ham-ant@ucsd.edu

Steven,
     I would like to thank you for your input and further explanation in
relation to my problem. Your responce is very helpful indeed. I hadn't
realized that the currents on the braid actually ran on the inside up and
could turn around and come back down on the outside...I thought they always
ran on the outside- and this explains much better to me how you can have
currents going both ways and also the further need for an *exterior* ground.
Looks like I will need to start being a little creative with an exterior
body *ground*. The idea about the field strength meter is also and excellent
idea...one I never had supposed. Thanks again for your reply indeed.

--
Vince Hadley |
KA7GVQ |
hadleyv@bones.et.byu.edu |

Date: 11 Jun 1994 21:48:38 GMT
From: ihnp4.ucsd.edu!swrinde!gatech!concert!inxs.concert.net!taco.cc.ncsu.edu!
csemail.cropsci.ncsu.edu!samodena@network.ucsd.edu
Subject: Curing RF Voltage on Rig case in Mobi
To: ham-ant@ucsd.edu

In article <2td24l$7ng@bones.et.byu.edu> hadleyv@bones.et.byu.edu writes:

>Steve[],
>   I would like to thank you for your input and further explanation in
>relation to my problem. Your responce is very helpful indeed. I hadn't
>realized that the currents on the braid actually ran on the inside up and
>could turn around and come back down on the outside...I thought they always
>ran on the outside-

Ah! You are not alone by any means...and a coax-fed 40 Meter dipole
that doesn't have a "choke" up there next to the feed point, can
bring the RF back into the shack via the *outside* of the braid--just as
I discussed for your mobile situation. A coax-fed dipole (without a
choke) is actually a TRI-pole when you count up the number of "wires"
that are "radiating."

Sometimes the tri-pole effect is *desirable* and the "choke" on the
feedline coax is placed some distance back on the coax, rather
than near the feedpoint.

But the point, which is quite similar to your car situation, is that
you don't want to allow the RF to get back to *you.* Once it does, its very
difficult to handle *because* many people try to treat the problem as
though they are dealing with DC or AC, but it's RF and it *wants*
to jump *around* impedements in its path...or radiate!

> and this explains much better to me how you can have
>currents going both ways and also the further need for an *exterior* ground.
>Looks like I will need to start being a little creative with an exterior
>body *ground*.

Let me introduce another visualization that might also help as you
think about solving your problem.

Let's fantasize a situation that your wife won't allow: you solder the
braid of the feedline coax right to the *exterior* car roof next to
where the center conductor connects to the whip. Now you have a dipole
antenna: the whip and the exterior of the car....

RF currents are now flowing all over the outside of your car...and the
opposite polarity current is also flowing in the vertical whip...and
these support the energy take-off into space.

Question: do you think that 80 meter RF can leak into the interior of the
car through the glass in the windows?

Answer: No!

This is a valid question for an antenna mounted on the back bumper...
does it radiate into the car?

If this were 2 meters where the *wavelength* of the signal is *approximately* the same dimension as the window opening, the answer would be that a lot of RF could get into the car via the back window (for trunk lid mounted antenna).

But the dimension of your Suburu windows are a very small fraction of a wavelength of 40 or 80 meters. As far as the RF fields are concerned, they can not "see" those window openings....you might as well be sitting inside a sealed metal box.

Now, by "grounding" the exterior braid of your mobile feedline to the body of the car, whether it's right by the whip or at a screw or braze point near the door opening on the *outside* of the car...you have set up the car as a sealed container with respect to you inside of it. The RF energy *itself* is always confined to the "space" *between* the conducting *surfaces* carring the opposite polarity currents (which is exactly how coax and twin lead work, if you think about it). The interior of your car is a "bubble" inside *one* of the surfaces carring the RF currents (think about that)....you are sitting inside of one the arms of your dipole.

Yes, certainly a little RF current will continue along the exterior of the braid into the car, but 99% of it will *prefer* to fan out onto the exterior surface of the car (under the paint) *because* it represents a very low RF IMPEDANCE path!

That 1% or 1 watt that gets into your car is very easy to handle... much easier than if you bring 50 or 75 watts in.

Suppose you *don't* ground the braid to the outside of that car, but ground the *rig* to the *interior* of the car body...which is what others advised--in effect.

Now we have a terrible situation: one current is going onto the whip, and the opposite current flows along the (insulated) exterior of the braid on a highly conductive path *into* the interior of your car and onto a ground braid between the radio and the *interior* surface of the car---where *finally* it has a chance to fan out. Where does it fan out to? Those currents (because of wavelength considerations) have trouble getting to the *exterior surface of your car...which is where they will try to go, whether by the windows or *any* wiring path that seems to lead to the exterior of the car...even via the engine compartment or via the tail light wiring or whatever.

Important question:
if the RF *energy* is always confined between the opposite conducting surfaceS, where is the energy confined? Answer: in the space between

the verticle whip and the *interior* surface of your car...via the
window openings!   Well that is not a happy situation...because we
have described a Moiblus Surface and it gets RF angry and confused...
and it *bites* you on the lip for revenge!   :^)

> ...The idea about the field strength meter is also and excellent
>idea...one I never had supposed. Thanks again for your reply indeed.

When you want to know where DC is flowing, you use an DC meter...
and you find RF with an RF meter. :^) I'll bet most people try to
trouble shoot RF problems inside their cars *without* using the
very *sniffer* that would tell them what is hot and what is not.

>Vince Hadley |

This little excusion was as much for all you mobilers, as for Vince...
because the responses make it clear that I am discoursing on a
common problem that many people are not visualizing correctly. So I
hope it helps *everyone* who has to solve this kind of problem....
and as we know, rf inside of the car bits your lip *and* blows out
a couple of $1,000 worth of control computers!

--
73/Steve/AB4EL   nmodena@unity.ncsu.edu

Date: 12 Jun 1994 04:53:56 GMT
From: ihnp4.ucsd.edu!usc!sol.ctr.columbia.edu!news.kei.com!ssd.intel.com!chnews!
cmoore@network.ucsd.edu
Subject: Curing RF Voltage on Rig case in Mobi
To: ham-ant@ucsd.edu

S. A. Modena (samodena@csemail.cropsci.ncsu.edu) wrote:

: Important question:
: if the RF *energy* is always confined between the opposite conducting
: surfaceS, where is the energy confined? Answer: in the space between
: the verticle whip and the *interior* surface of your car...via the
: window openings!   Well that is not a happy situation...because we
: have described a Moiblus Surface and it gets RF angry and confused...
: and it *bites* you on the lip for revenge!   :^)
: 73/Steve/AB4EL   nmodena@unity.ncsu.edu

Hi Steve, Can you explain my problem. I have my bumper mounted mobile
antenna grounded outside at the bumper with a choke balun on the
transmission line. That ground was the only one in the system. Inside
the cab, I have a separate battery and transceiver. I had RF in the cab

something fierce. A two-foot ground wire from my transceiver to the S10 chassis lowered the RF in the cab to a neglible value. Do those results agree with what you said above? Where was my RF in the cab coming from and where did it go?

73, KG7BK, OOTC, CecilMoore@delphi.com

Date: 12 Jun 1994 07:12:41 GMT
From: ihnp4.ucsd.edu!dog.ee.lbl.gov!agate!howland.reston.ans.net!sol.ctr.columbia.edu!hamblin.math.byu.edu!news.byu.edu!news@network.ucsd.edu
Subject: Curing RF Voltage on Rig case in Mobi
To: ham-ant@ucsd.edu

Steve,
     I think this discussion about this problem that you and others have taken time out of your busy schedules to contribute to has proven to be quite profitable (I was thinking someone ought to archive some of these discussions for future refferal for those wanting answers to various problems and put them at an ftp site and call them "the best of usenet"...for amatuer radio of course)
 I have had a few physics classes but I'm not normally used to thinking in that frame of mind and so I am a little wet behind the ears...but I can see what you are talking about. Your comments are most helpful and much appreciated... again thankyou.

--
Vince Hadley |
KA7GVQ |
hadleyv@bones.et.byu.edu |

Date: 11 Jun 1994 23:50:28 GMT
From: ihnp4.ucsd.edu!swrinde!howland.reston.ans.net!newsserver.jvnc.net!yale.edu!nigel.msen.com!heifetz.msen.com!koechig@network.ucsd.edu
Subject: help w/antenna/amp problem
To: ham-ant@ucsd.edu

Here is the problem:

With my homebrew 2 meter j-pole and yaesu ft-23r I get an swr reading of under 1.5:1 at both power levels. With the rf concepts amp I just bought, if I use low power coming from the radio I get about 8 watts out with still a good swr. However if I use the 5 watts out from the radio my swr rockets to almost 3:1! I would think that both power levels would reflect the same swr if everything was ok. Does anyone have any insight?

Thanks,
Bill Koechig N8PKA
Pontiac, MI

Date: 12 Jun 1994 04:58:01 GMT
From: ihnp4.ucsd.edu!swrinde!gatech!newsxfer.itd.umich.edu!zip.eecs.umich.edu!
yeshua.marcam.com!news.kei.com!ssd.intel.com!chnews!cmoore@network.ucsd.edu
Subject: help w/antenna/amp problem
To: ham-ant@ucsd.edu

B Koechig (koechig@garnet.msen.com) wrote:

: ...if I use the 5 watts out from the radio my
: swr rockets to almost 3:1! Bill Koechig N8PKA

Hi Bill, what is your SWR measuring configuration?

73, KG7BK, OOTC, CecilMoore@delphi.com

Date: Fri, 10 Jun 1994 14:34:11 -0400
From: ftpbox!mothost!lmpsbbs!NewsWatcher!user@uunet.uu.net
Subject: Newbie Continues Pondering J-Poles...
To: ham-ant@ucsd.edu

In article <1994Jun9.054820.287@iitmax.iit.edu>,
CMSMANDELIN@minna.acc.iit.edu (The Artation) wrote:

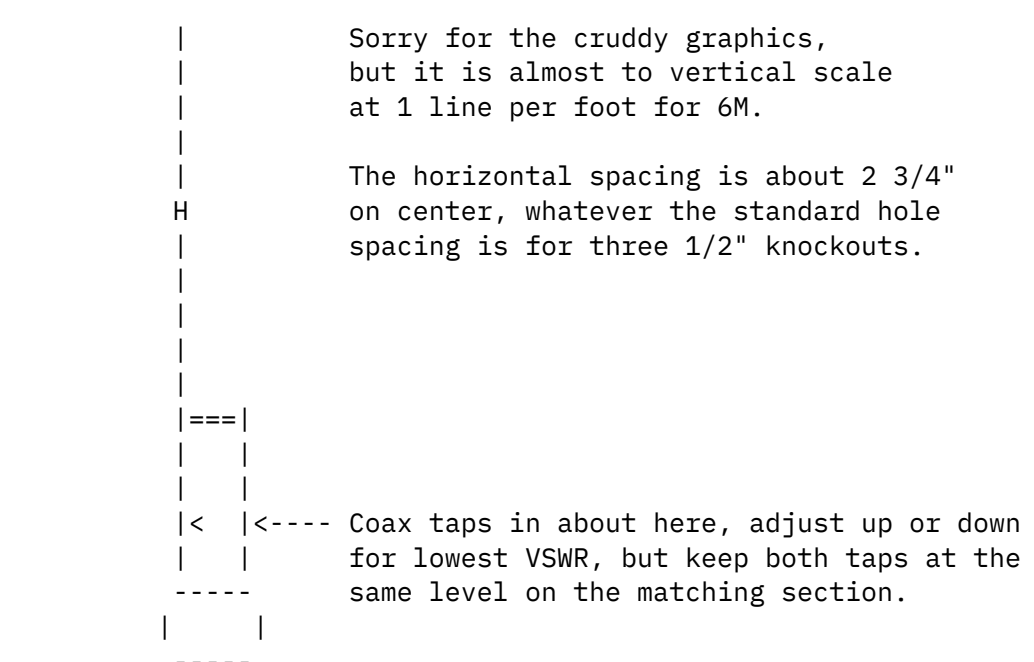
> First off, thanks to all those who answered my original message (and there
> were quite a few of you!)
>
> I now have a second question... I decided to post it here instead of sending
> it by E-mail to everybody who replied to me, since this seems much more
> efficient!
>
> The J-Pole I am building is called "The Electrician's J" and was designed
> by Ed Rate, AA9W. It is basically two aluminum rods running through a
> standard 4" square electrical box.
>
> Q: I am unclear on one small point... are the two rods meant to be
> electrically continuous or should they be isolated from each other?
> Based on the many design suggestions forwarded to me, I would guess
> that they should NOT be insulated from each other.
>
> Thanks again!

>
> de N9THH
>
>
>
>
> Arthur M. Mandelin, II   ("The Artation")   CMSMANDELIN@harpo.acc.iit.edu
> "I am just a worthless liar / I am just an imbecile ..."
>   -- Tool, "Sober" (Undertow)

The one I built for 6M lots of years ago (still standing) uses a 2x4 outdoor weatherproof handy-box and the same idea. Yes, the bottom ends of the line section were connected. Think of this matching stub as a length of open wire line. The bottom end is shorted, the top is open, and the half-wave section connects to the top of the stub on one side. The coax attachment point is roughly one third of the way up the stub when using 50 ohm coax and 1/2" EMT for the vertical members.

On 6M the lengths work out great, by the way. Buy two 10 ft lengths of 1/2" EMT, two box fittings, and one coupler. Then cut one length of EMT exactly in half to make the short side and put the coupler on top of the 10 ft length to add the other 5 ft section on top. Last, get a piece of lucite rod, cut to length to fit between the top of the short and long vertical sections and put in a screw from each side to maintain rigidity. Be SURE to put top caps on both of the vertical sections, or the thing sounds like an ocean liner's horn if you get a good wind!

When completed it should look like this:



--
Karl Beckman, P.E.   < Genius may have its limitations, but >
Motorola LMPS- Analog Data   < stupidity is not thus handicapped.   >
                                <   - Elbert Hubbard >
The statements and opinions expressed here are not those of Motorola Inc.
Amateur radio WA8NVW @ K8MR.NEOH.USA.NA   NavyMARS VBH @ NOGBN.NOASI

Date: Sat, 11 Jun 1994 20:14:57 GMT
From: ihnp4.ucsd.edu!library.ucla.edu!europa.eng.gtefsd.com!mozart.amil.jhu.edu!
blaze.cs.jhu.edu!darwin.sura.net!fconvx.ncifcrf.gov!mack@network.ucsd.edu
Subject: Parabolic antennas?.
To: ham-ant@ucsd.edu

In article <1994Jun11.065836.22940@clark.dgim.doc.ca>
rwhittak@orion.docwhitehorse.doc.ca (Richard Whittaker) writes:
>Hi there from Whitehorse!...
>
>I'm inquiring as to whether anyone has the design specs (read: calculations,
>etc, etc) for designing a paraboolic dish for the 400MHz band, specifically
>a high capacity data channel on 444.600.. I need a very focused, high gain
>antenna, and it occurred to me that a parabolic dish would fit that bill
>quite nicely... :-)

     Almost no-one uses dishes below 2GHz, and particularly not at 400MHz.
Yagis, loopers and helices are usually used instead. As far as I can tell
the reasons are that a 10' dish has a high wind load and at 400MHz
is severly diffraction limited (ie the dish is not large wrt the
wavelength and you don't get good effieciency). Although I don't know
the exact numbers, I remember the gain available from a 10' dish at
432 is also availalbe from a relatively modest number of long yagis,
which have a much smaller wind loading and which are much lighter
than a dish (easier to steer).

     Two well accepted designs for 70cm are the K1FO's (made
commercially by Rutland Arrays, see QST for ads) and the DL6CW.
Both designs are (supposed to be) easy to make, although I've not had a lot
of success myself in that area (at least yet). The K1FO is more
popular in the US, possibly because the designer lives here and
the DL6CW is more popular in Europe. The DL6CW design has the advantage that
if you want more gain, you just add more elements in front. All other designs
require changes in the element lengths if you add more elements. The DL6CW
design has been around longer (I believe) and is commonly seen at antenna

gain contests in the US. A good place to read about these two
designs is the VHF/UHF DX book, available in NA via the ARRL.

     Joe Mack NA3T
     mack@ncifcrf.gov

>

End of Ham-Ant Digest V94 #181
****